J. MAZER.

WINDING INDICATOR.

APPLICATION FILED MAR. 1, 1913.

1,166,469.

Patented Jan. 4, 1916.

2 SHEETS—SHEET 1.

FIG. 1

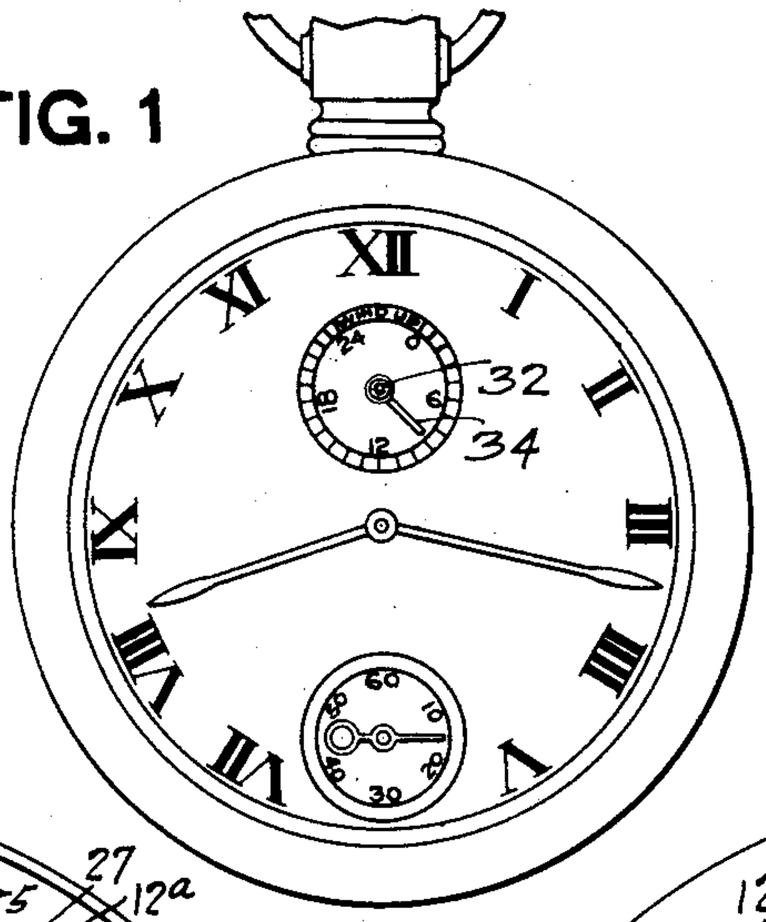


FIG. 2

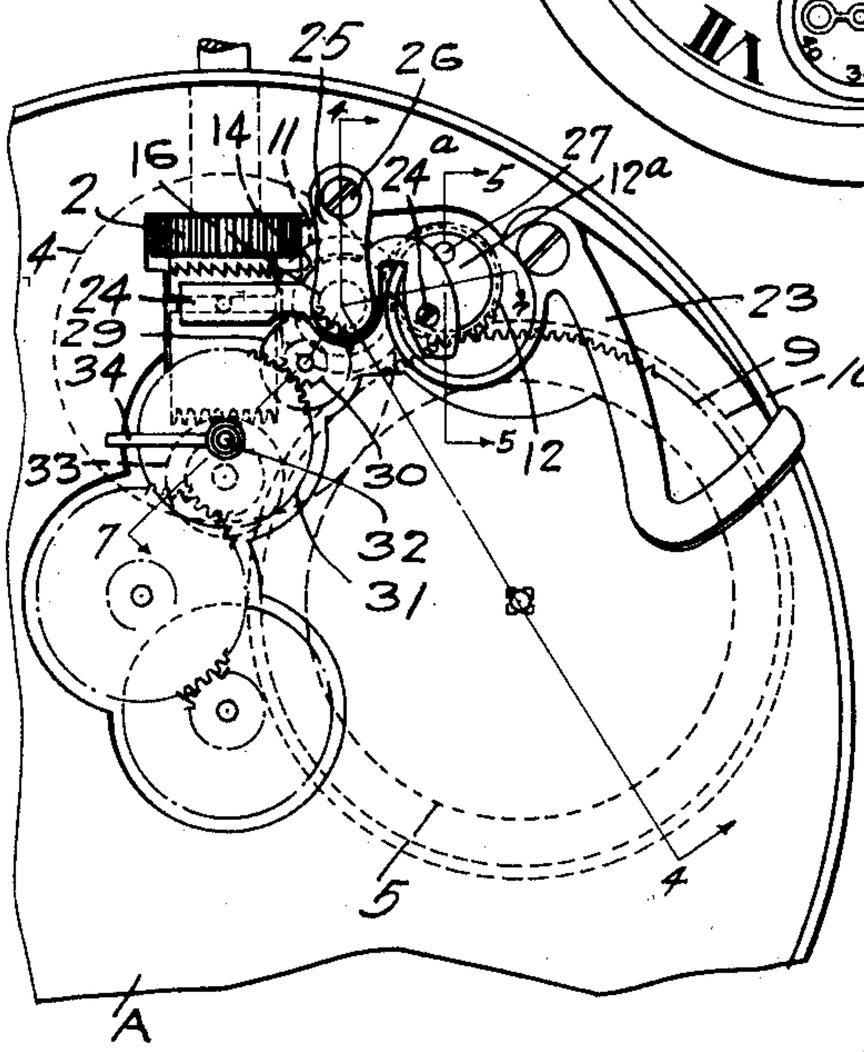


FIG. 3

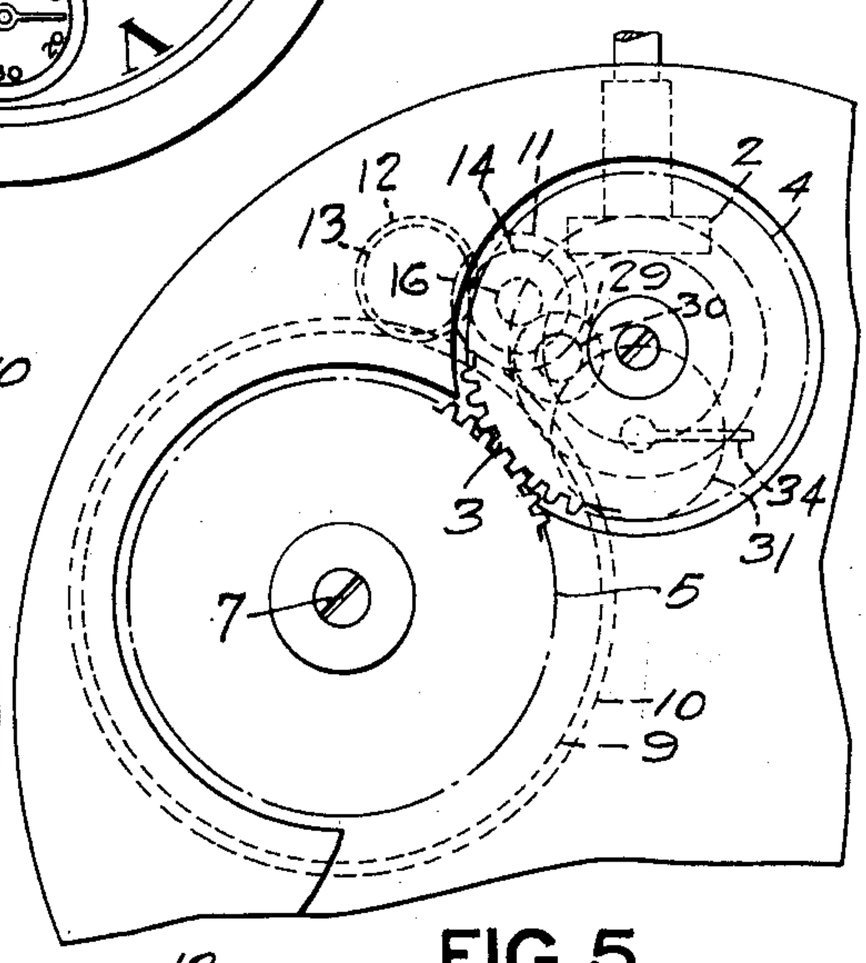


FIG. 4

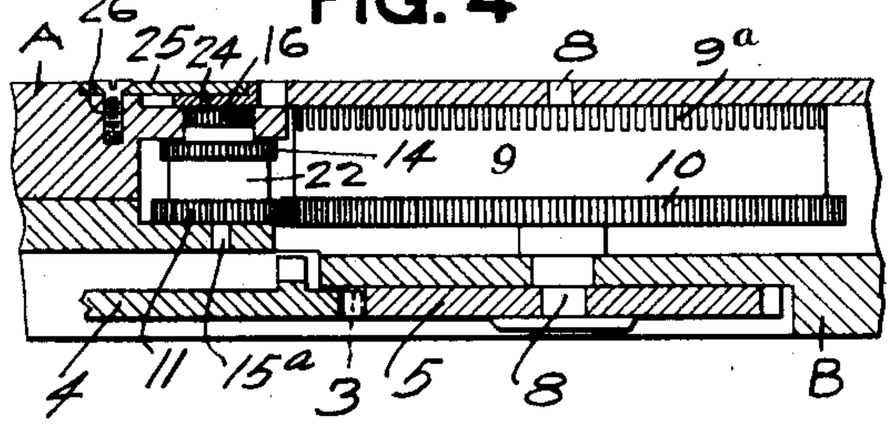
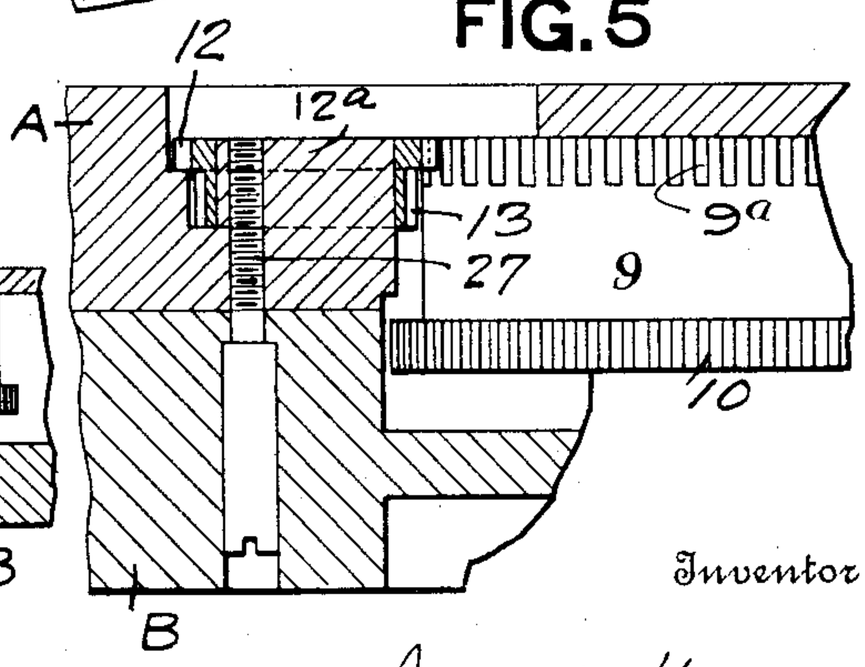


FIG. 5



Witnesses

J. R. Keller

Robt. C. Fotten

Inventor

Joseph Mazer

By Kay & Fotten

Attorneys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

FIG. 6

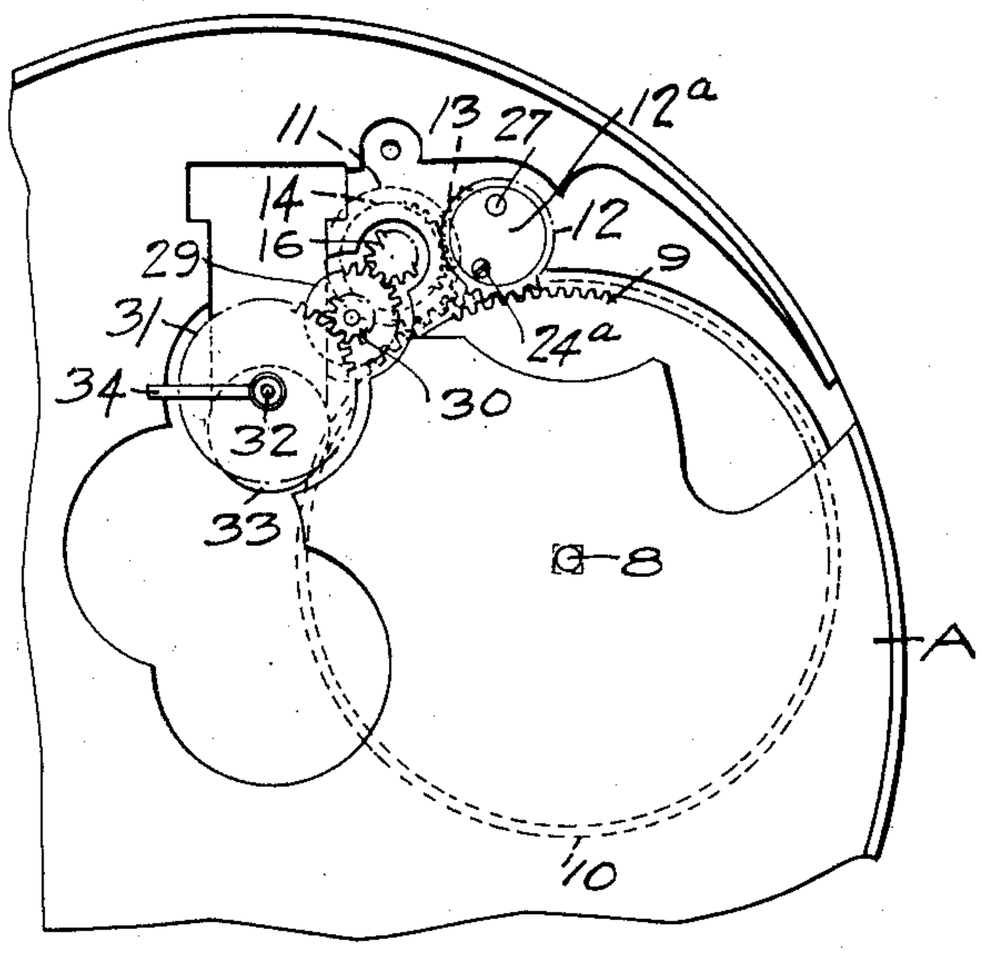


FIG. 8

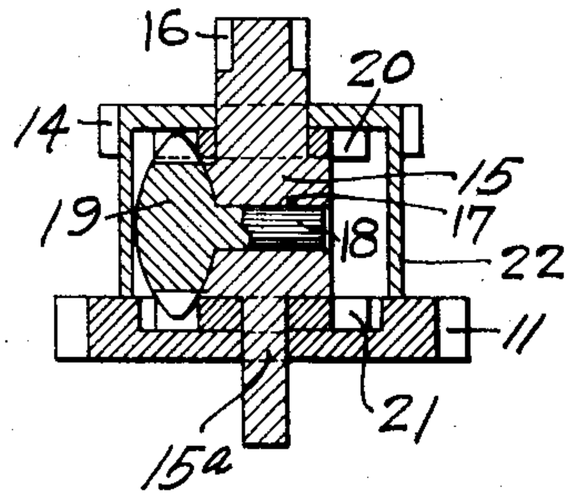


FIG. 9

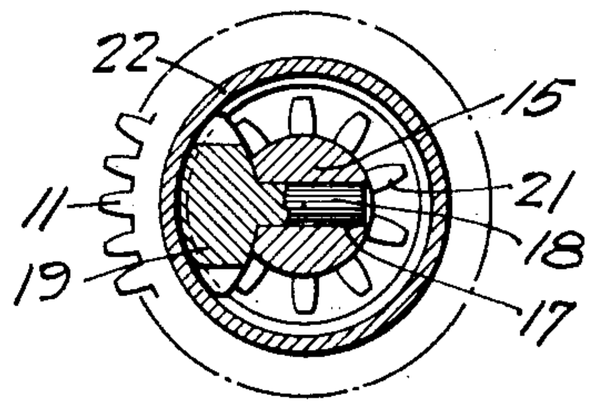
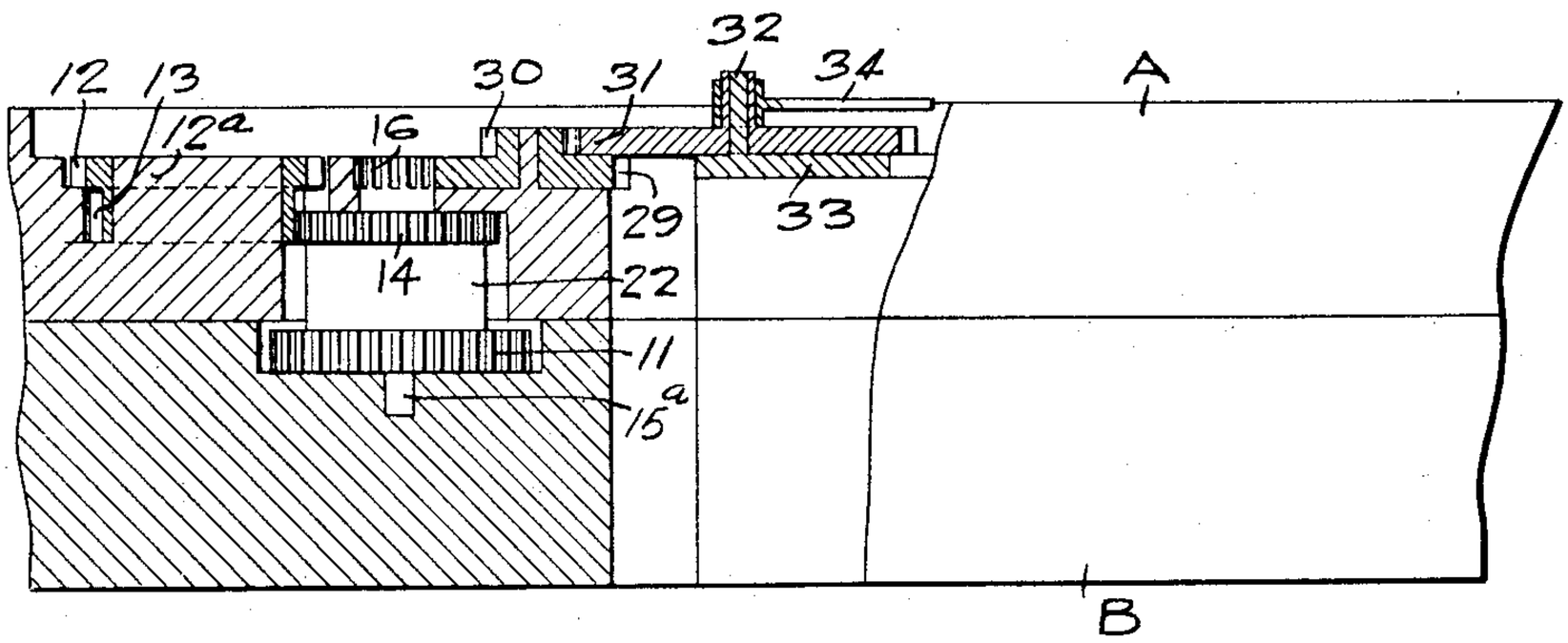


FIG. 7



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Robert C. Totten

By

Inventor

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Kay & Totten

Attorneys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH MAZER, OF McALESTER, OKLAHOMA.

WINDING-INDICATOR.

1,166,469. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed March 1, 1913. Serial No. 751,473.

To all whom it may concern:

Be it known that I, JOSEPH MAZER, a citizen of the United States, and resident of McAlester, in the county of Pittsburg and State of Oklahoma, have invented a new and useful Improvement in Winding-Indicators; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to winding indicator mechanism for watches, graphophones or other devices, which shows to what extent the device has run down and when it needs winding up.

The object of the invention is to provide a simple and effective form of mechanism for this purpose which can be located in the ordinary watch movement (when it is applied to a watch) without increasing the size of the space required for such movement and without the necessity of changing materially the standard construction.

To these ends my invention comprises the novel features hereinafter set forth.

In the accompanying drawing Figure 1 is a face view of a watch with my invention applied thereto; Fig. 2 is an enlarged face view with the dial removed; Fig. 3 shows the reverse side of the watch showing crown wheel and ratchet; Fig. 4 is a cross section on the line 4—4 Fig. 2; Fig. 5 is an enlarged view of main wheel and main spring barrel showing the manner of mounting the ring wheel; Fig. 6 is a view similar to Fig. 2 with the lever setting arrangement removed; Fig. 7 shows connections between the main spring barrel, main wheel and indicator attachment to indicator hand wheel; Fig. 8 is an enlarged section of the planetary system; and Fig. 9 is a cross section of Fig. 8.

The numeral 2 designates the pinion on the winding shaft which meshes with the crown teeth of the crown wheel 4 which has the teeth 3 meshing with the ratchet wheel 5 which is held from reversing by a suitable pawl in the ordinary manner. The ratchet wheel is held down on the barrel arbor 8 by the screw 7, said arbor being integral with the safety barrel 9, which is provided with teeth 9ª. The main wheel 10 is mounted loosely upon the barrel arbor 8 and meshes with the gear wheel 11.

The letter A indicates the lower plate of the watch and B the upper plate, taking the dial face as the lower part of the watch when the watch is open from behind to expose the works.

The planetary system is in the form of a unit made up of the following parts: As above stated the gear wheel 11 is engaged by the main wheel 10 and rigidly connected with said wheel 11 is the sun gear 21. The rotating arbor 15 has the journal portion 15ª which passes through the wheel 11 and pinion 21 and is journaled in the upper plate B as indicated in Fig. 7. At the opposite end of the arbor 15 is formed the pinion 16. A casing 22 has the opening through which the arbor 15 passes, said opening being as large as the pinion 16 so as to permit of the withdrawal of the arbor together with the pinion from said casing. The casing 22 has the gear wheel 14 connected or formed integral therewith, and said casing rests upon the gear wheel 11 so as to form with said gear wheel 11 a dust-proof chamber. A sun gear 20 is rigidly connected with the casing 22. A planet gear 19 which is double convex in shape is provided with the stud 18 which enters the opening 17 formed in the rotating arbor 15. The teeth of the planet gear 19 mesh with the sun gears 20 and 21. By forming the planet gear 19 double-convex I obtain a stronger construction and am enabled to locate said gear nearer the center, thereby enabling me to make an attachment taking up less room, and also enabling me to clear more easily the teeth of the sun gears 20 and 21 than would be the case if said planet gear were flat on the inside. By having the stud 18 integral with the planet gear 19 I dispense with the necessity of securing a stud or bearing into the said planet gear which makes it possible to employ a smaller attachment. Furthermore by recessing the gear wheel 11 for the reception of the sun gear 21 I save space and am enabled to make a more compact device.

I have illustrated my invention in connection with a watch of standard construction in which 23 is a set lever and 24 is the shifting cam. The shifting cam is fulcrumed on the screw 24ª and the screw 27 passes up through the top plate B into the bottom plate A to hold said plates together. In order to connect up with the teeth 9 of the main spring barrel I form a hub or boss 12ª in the bottom plate A around the screws 24ª and 27, so as not to disturb the original construction of the watch. Around this boss

12[a] is loosely mounted the double ring gear wheel 12 which meshes with the safety barrel 9 and through its teeth 13 with the gear 14. Above the gear wheel 12 I locate the shifting cam 24 which acts to assist in holding down said wheel 12, and 25 is a cap used to hold down the shifting cam 24. This cap is held in place by the screw 26. The gear wheel 29 meshes with the pinion 16 and integral with said gear wheel 29 is the pinion 30 which meshes with the indicator wheel 31 mounted on the pivot 32 in the cap 33. The indicator hand 34 is secured to the indicator wheel 31. During the winding, motion is imparted to the pinion 2, through the crown wheel 4 and through the ratchet 5 rigidly connected with the main spring barrel 9. The teeth of the main spring barrel 9 impart motion to the wheel 12 and through the teeth 13 and the gear wheel 14 the rotation of the gear wheel 14 carries with it the sun gear 20 and the planetary pinion 19 is rotated, carrying with it arbor 15, said pinion 19 traveling in the teeth of the sun gear 21 of the gear wheel 11, which is relatively stationary by virtue of its connection with the main wheel 10. The rotation of the arbor 15 through the pinion 16 imparts rotary movement through the intermediate train to the indicator hand 34, returning the same to zero. When the watch is running the gear wheel 14 and sun gear 20 remain stationary by virtue of the wheel 14 meshing with the pinion 13 which is held from rotating by the main spring barrel, being connected with the ratchet wheel 5 held from rotating by the ordinary pawl. The main wheel 10 imparts rotation to the gear wheel 11 and through the connections described the planet gear 19 is rotated and its teeth engaging the stationary sun gear 20 it rotates about said pinion, carrying with it the arbor 15 whereby a reverse movement is imparted to said arbor and pinion 16 and the indicator hand 34 which moves over the dial to indicate the amount the watch has run down.

By the employment of the plate 25 for holding down the shifting cam 24 I am enabled to locate the pinion 16 directly below said shifting cam where the screw was originally located for holding said shifting cam in position. I am thus enabled to locate the indicator mechanism in the watch without changing the location of the shifting cam which would mean a change in construction of the watch movement.

While I have referred to pinions 20 and 21 as sun-gears it is to be understood that they only act as such alternately.

The safety spring-barrel has been employed in the present case but it is apparent that the device will work equally well with the ordinary main-spring barrel.

What I claim is:

1. In winding indicator mechanism, the combination of a spring-barrel, a main wheel, winding mechanism including a ratchet-wheel, a rotary-post, a gear-wheel encircling said post, connections between said gear-wheel and said main wheel, said gear wheel having a recess, a pinion in said recess connected to said gear-wheel, a cup-shaped member encircling said post and forming with said gear-wheel a chamber, a gear-wheel connected to said cup-shaped member, connections between said last named gear-wheel and said ratchet-wheel, a pinion on the inside of said cup-shaped member and connected thereto, a planet-gear meshing with said pinions and loosely mounted on said post, a pinion on said post, an indicator hand, and connections between said pinion and said indicator hand.

2. In winding indicator mechanism, the combination of a spring barrel, a main-wheel, winding mechanism including a ratchet wheel, a rotary post, a gear-wheel encircling said post, connections between said gear-wheel and the main-wheel, a second gear wheel parallel with said first gear-wheel encircling said post, connections between said second gear-wheel and said ratchet-wheel, a double convex planet-gear engaging said gear-wheels and loosely mounted on said post, a pinion on said post, an indicator hand, and connections between said pinion and said indicator hand.

3. In winding indicator mechanism, the combination of a spring barrel, a main-wheel, winding mechanism including a ratchet-wheel, a rotary post, a gear-wheel encircling said post, connections between said gear-wheel and the main-wheel, a second gear wheel encircling said post parallel with said first gear-wheel, connections between said second gear wheel and said ratchet-wheel, a planet-gear meshing with said gear-wheels, a stud on said planet-gear entering an opening in said post, a pinion on said post, an indicator hand, and connections between said pinion and said indicator hand.

4. In winding indicator mechanism, the combination of a safety main spring barrel, a main-wheel, winding mechanism including a ratchet-wheel, a dial-plate, a hub formed on said dial-plate, a double ring gear encircling said hub, connections between one set of the teeth of said double ring gear and the ratchet-wheel, planetary gear-wheels forming part of a reversing mechanism, connections between the other set of teeth of said ring-gear and one of said planetary wheels, connections between the other planetary wheel and the main-wheel, and an indicator hand operated thereby.

5. In winding indicator mechanism, the combination with the vibrating arm of the set-lever arrangement, of a dial-plate, a plate secured in the dial-plate holding said vibrating arm in position, a pinion beneath said vibrating arm, and means for rotating said pinion.

In testimony whereof, I the said JOSEPH MAZER, have hereunto set my hand.

JOSEPH MAZER.

Witnesses:
ROBERT C. TOTTEN,
JOHN F. WILL.